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1834

OBSERVATIONS

ON THE

MINERAL WATERS

IN THE

SOUTH WESTERN PART OF VIRGINIA.

IN A SERIES OF LETTERS.

BY A PHYSICIAN OF PHILADELPHIA.

“Ho voluto profittar di questo momento di tempo per darle un' idea della mia patria; questa non sarà che una grossolana pittura, dovechè alle mani d' un altro sarebbe stata una vaga miniatura: il soggetto ne meritava la pena, ma il mio pennello non è tanto delicato da poterlo eseguire.”—GANGANELLI.

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PREFACE.

THE ensuing observations were made during a visit to Virginia in the month of August 1833, and were communicated in letters for the National Gazette, with considerable doubts on the part of the Author of their being worthy of publication. The highly accomplished conductor of that paper, having received the earlier numbers kindly, and expressed a desire to have the subject continued, the Author, was induced to proceed with it in deference to his judgment; and also with the view of imparting information which it was thought might be useful, to the medical profession and to the valetudinarian. The Letters as published in the National Gazette, were without proper signature, but as from accidental causes their source became partially known, numerous applications were made for information on the matter, and for copies of them. A wish to supply the latter deficiency has induced the Author to superintend a more accessible and a somewhat improved edition of them.

The region of Virginia in which those Springs are situated, is one of the most attractive in our country as a summer resort; its elevation being about fourteen hundred feet above tide water secures it from the intense and unmitigated heats of the same latitude elsewhere; while its position on that parallel prevents what is common to the mountainous districts of the middle and northern states, to wit frosts and severe cold occasionally at all seasons. It is however not pretended that the temperature is absolutely uniform during the visiting season, which extends from the first of July to the middle or last of September; it presents varieties depending upon fluctuating currents of air, like all parts of the United States: but the following may be stated as a general rule; the forenoon and afternoon are pleasant, mid-day is rather warm, and from sunset to sunrise a fire is frequently agreeable. This district being in the midst of the Alleghany moun-

tains and their spurs, abounds in bold and majestic scenery, which to the lover of natural landscape affords inexhaustible amusement. It is traversed by a main inland route which connects the valley of the Ohio with that of the James River, and from its locality may be considered as a focal point for the rendezvous and amusement of the people of both the marine and ultra-montane states; a relation which a due cultivation of its natural advantages, and the high medicinal efficacy of its waters, will probably establish fully, at a future day not very far distant,

Philadelphia, July 8, 1834.

OBSERVATIONS.

LETTER I.

Lee's Sulphur Springs, near Warrenton, Fauquier County, Va.

AUGUST 16, 1833.

MR. EDITOR,

The extent and importance of the travelling interest of our good city of Philadelphia, make it useful to impart such information as individuals may obtain, in their excursions to the several points of attraction of our highly favored country : and should your columns not be occupied with more valuable matter, I may perhaps find space in them for a few observations up to the present date of my own journey.

Myself and company left Philadelphia in the Union Line, at 6 o'clock, August first, and found ourselves at 2 o'clock, P. M., at the wharf at Baltimore. At 3½ we took stage for Washington and reached there at 10½. The journey was accomplished thus in fifteen and a half hours without fatigue, or annoyance, and with every attention and foresight to our comfort, the average rate of progress being nine miles an hour. The next day we entered a good stage at Washington by the Piedmont route, and crossing the long bridge over the Potomac, found ourselves in a short time in the handsome little town of Alexandria, which was for many years a great mart for flour and tobacco, but had its prosperity interrupted by the peace of Amiens in 1803, and has been stationary ever since.

At 11 o'clock we left Alexandria for the Virginia Springs, and reached Warrenton distant 44 miles at 8½ o'clock. The road between these two places is a turnpike made with about as much skill, as is common in the interior of the United States. It goes in a line of almost unvarying straightness, over a series of hills, after the manner of the old Roman military way, and with little or no reference or deference to the elevation of the ground by running around the ends of high hills and along vallies. This day's ride is fatiguing from the monotony and exhausted state of the country, until it reaches within eight or ten miles of Warrenton. A good rural dinner to one whose appetite is sharpened by travelling,

is got at Bronaugh's tavern sixteen miles from Alexandria : in seven miles more you get to the village of Centreville, and from thence you have the distant prospect of the Blue mountains, the ridge from which this stage route is called the Piedmont. After the tame flat surface of the shores of the Delaware and Potomac, the view of these mountains breaking suddenly on the sight, and the sombre tints of the atmosphere surrounding them, are highly picturesque and exhilarating ; the stage drives rapidly on as if to reach their feet, and in two or three hours more you find yourself among the spurs and tributary hills which form their base.

After an ascent of about six hundred feet above tide water you arrive in the village or town of Warrenton the seat of justice of Fauquier county, and containing about twelve hundred inhabitants. It is placed on the summit of a hill, and at the distance of several miles around presents from the heights, a most agreeable and inviting aspect of houses interspersed with a luxuriant growth of Poplar, (*Populus dilatata*) Tulip, (*Liriodendron Tulipifera*) Locust, (*Robinia Pseudo-acacia*) and several other forest trees.

Many of the private residences are extremely well kept and comfortable, and occasionally a chance is presented of getting one for the season at a very moderate price, with its furniture and a muster roll of Virginia domestics of all sorts and sizes. I have heard of one of that kind with a good mountain view and several acres of ground, use of ice-house, and fine kitchen garden, at forty dollars a month. Think of that, and at the same time of a room ten feet square occupied for pleasure at the sea shore or Saratoga, and ten dollars a week for board. There are here some good boarding houses, and two good hotels ; one of which (Shacklett's) is distinguished for excellent accommodation, and the urbanity of its landlord.

August 5th. We visited Lee's Sulphur Spring, on the Rappahannock River, six miles from Warrenton. The local reputation of this water has been great for several years, though it is now only becoming more generally known and resorted to. Its principal celebrity is for the cure of indigestion, diarrhœa, hepatic, rheumatic and pulmonary complaints. An old gentleman named Lee, the father of the present proprietor, and to whom it was known for thirty or forty years, considered it excellent for chronic gout, a complaint to which he was subject for many years, and had a lodge built near it for himself, at a time when no other habitation was convenient. An intelligent gentleman, Mr. Ingraham, whom I met there, and who has tried it for six years in succession, is of opinion that full benefit may be obtained from it in a fortnight, in stomach affections. It is very desirable, however that in place of popular opinions a good set of observations of a positive kind should be made by a medical man, setting forth the nature and grade of complaints treated by it, and the changes

produced at definite times. Also the physiological effects of the water upon a person in health, which I have no doubt must be strongly marked, in the action of the stomach, bowels and kidneys.

A good table is kept; there are about 27 lodging rooms in pairs, of brick mostly, about fifteen feet square, and arranged in the form of a crescent as yet incomplete. The dining room, unfinished but used, is about 80 feet long, and twenty wide;—the parlor about 40 by 25. The establishment is rather incomplete, but the enterprise of its owner, will in a short time give it a proper arrangement. The grounds about it are unimproved and the country broken, hilly and wild. The spring is in a valley not more than ten feet above the level of the river, but the cottages are on an eminence near it. The river is a quarter of a mile off, its banks being thickly set with trees and wild shrubs. This district of country is for miles around remarkable for its healthfulness. Epidemics or general sickness are almost unknown. Its inhabitants are polite in their intercourse with strangers and much disposed to be accommodating; the general vigorousness of their appearance, and the robustness of their figures indicate the salubrity of the region. It is formed from spurs and subordinate ranges of the Rappahannock mountains, connected with the Blue Ridge and constituting its abutments, and abounds in every direction with strong picturesque scenery. The cultivation of the soil, though in many places good, would not suit the eye of a Pennsylvania farmer. The face of the ground presents a deep covering of red decomposed trap rock, with white flint stone abundantly dispersed over its surface. Gold has been found in small quantities. One of the most remarkable geological features, however, of this sort of soil, which is continued into the adjoining counties, is, according to the Hon. John Randolph, that of having been very prolific in Presidents of the United States. It is perhaps a knowledge of this genial influence which has induced some of our distinguished public men to vegetate on it for the season.

The spring water throughout this district, is most excellent, and flows from the foot of the hills, every where in great abundance, and perfectly filtrated, so that nothing is perceived but the pure element. Mr. Jefferson had a high opinion of the salubrity of this region, which he constantly traversed in his Monticello journies, and in 1803, owing to the existence of yellow fever, was on the eve of adjourning his cabinet to Warrenton. Should the national road to New Orleans ever be formed, there are many valid reasons for conducting it by this route.

The following is the result of some experiments on the spot, of Lee's Sulphur Spring, repeated in each instance thrice or oftener.

The water added to a solution of acetate of lead, produced a black precipitate;

With sub-nitrate of bismuth, it formed a light freckle colour;
To a solution of the prussiate of potash, no change.

A piece of silver coin (half a dollar) was brightened and then immersed for ten minutes in the water, in which time its colour changed to a copper.

Sulphuretted-hydrogen gas would therefore seem to be the principal ingredient, and that in considerable abundance. This gas has a very active agency on the animal tissues in certain circumstances, and must no doubt modify them much when taken abundantly into the stomach.

The temperature of this spring is about 62 deg., it being in an exposed situation, and the atmosphere at 83 deg. This estimate is, however, conjectural, as I had not my thermometer at the time, and therefore went by feeling.

Respectfully your obedient servant,

O.

Since the above letter was written, a very distinguished citizen, Chief Justice Marshall, has spent a fortnight at Lee's Spring, it is said with much benefit to his health; and several improvements in personal accommodation have been introduced.

LETTER II.

Warm Springs, Virginia, August 14, 1833.

MR. EDITOR,

If the further itinerary of a tourist, since mine of the 6th of August, would be likely to interest your readers, whose health or desire of recreation may take them the same way, the following remarks are at your disposal. The letter referred to was dated Warrenton. In a short time afterwards we resumed the route to the springs, by the way of Charlottesville distant 75 miles. The stage commonly departs at 3 o'clock in the morning, but for some reason not very apparent we were started from our slumbers at 1 o'clock. The night being uncommonly fine, a view of the heavens at this period of it, was a compensation for the loss of repose. The first six miles of this road are hilly and rough: it afterwards improves and continues as most roads over an undulating country, until it reaches within eight miles of Charlottesville, when steep declivities and broken passes return. A good breakfast is got at Culpepper Court House, distant twenty-five miles, and a good dinner at Orange Court House, twenty miles further on. The country is under cultivation of an inferior kind, but the site

is rendered very interesting by the various views of the Blue Ridge, extending sometimes over a space of forty miles, and then again reduced to a few of its highest points. The road leads along the estate of Mr. Madison, but his house is not visible; six or eight miles further on, it goes within a short distance of the mansion of Governor Barbour, which has a prepossessing and rural appearance. From time to time, the fine large estates of other citizens of less note are traversed, which brings the traveller to the banks of the Rivanna river, and after following it a short distance, the glittering dome of the University of Virginia, and the celebrated Monticello are brought into view. Having crossed the Rivanna over a good bridge, a ride of a few minutes brings one to Charlottesville. The journey of the day is upon the whole agreeable, the equipment of the stages is strong, and the movement is rapid; one or more of the drivers superlative, and all of them very good. This line is a continuation of the Piedmont, which beginning at Washington ends in Georgia, and has a highly enterprising proprietor—Mr. W. Smith.

One day may be spent most agreeably at Charlottesville; the morning in a visit to Monticello, and the afternoon in another to the University of Virginia, the urbanity and politeness of whose professors can only be exceeded by their talents and learning. They are frequently visited by persons who are entire strangers and have no claim upon them, not even that of an introductory letter, and yet they have uniformly sustained the hospitable character of the state.

The pilgrimage to Monticello for such it may be called, was of course one of the first objects of our own arrangement, and may be accomplished in a carriage, though the ascent is rather fatiguing. It is distant about three miles, and the summit is five hundred feet above the Rivanna, being crowned by the Mansion House. The view from the latter, of the Blue Ridge, of the North, the South, and other mountains, has all the richness and magnificence which fame has attached to it. The house is antiquated in appearance, and from its having passed into the hands of another proprietor since the death of its distinguished founder, it is of course stripped of much which gave it interest; memorials however are here and there left. It occupies a large area; and its exterior is imposing; but it would be difficult to give it a generic appellation in architecture. Its interior arrangement is intricate and I should think inconvenient, notwithstanding the multitude of devices, with which it abounds; one of our thrifty Philadelphia matrons could doubtlessly have excelled in practical skill the great President of the United States, in this department of housewifery. There is however one radical objection to the whole as a habitation; its great elevation with an abrupt ascent on every side, makes it a work of endless difficulty, to supply the domestic establishment with articles of ordinary con-

samption—as provisions—fuel—water; every thing must be done with triple labour, a consideration well worthy of the attention of one who wishes to live on the top of a hill, except he be an astronomer.

One of the parlour floors is pannelled like a door, and the wood variegated; another floor is laid in fish bone pattern like a pavement of brick. These devices are common abroad but not in this country, and they have a great advantage in keeping a floor perfectly level and without warping, which are almost impossible under other circumstances, in old buildings. There is an eight day clock with a Chinese gong, that may be heard at a great distance, and weights so fixed as to tell by their descent the day of the week; *cum multis aliis*.

It is said that Mr. Jefferson spent about eighty thousand dollars on his mansion and in improving his grounds, exclusive of the labour of his negroes, horses and oxen, to the same end, which by the way a Virginia economist never thinks of computing, as he has those things already on hand!! Much of the expenditure must however have occurred in levelling the summit of Monticello and in getting a road to it. The great and absorbing point of interest yet remains. As you approach the house a small enclosure of rough dry stone work indicates the family burying place. Two tombstones elevated above the ground are seen in it, the upper one being that of a daughter of Mr. Jefferson, and the lower of some other member of his family. Ten or twelve feet from the upper tomb, a small unobtrusive pavement of bricks, seven feet by three feet, on a plane with the ground and half covered by its washings of dirt, cover the remains of the man who once had so large a share of public attention, and gave such signal directions to popular opinions—Thomas Jefferson—the Author of the Declaration of Independence and one of the most active contributors to it—a President of eight years of the United States—the purchaser of Louisiana—the Patriotic Sage, and the Founder of the University of Virginia. How striking a contrast is his now humble and neglected sepulchre to the vast sphere in which his master spirit once moved! We may canonize the memories of our great men, and lavish verbiage in their praise; but there is no evidence from the desolation which surrounds their graves, that we expect ever to see either political or any other kind of miracles done at them, or even to supply that strong stimulus to virtue and to patriotism which would be created by the view of splendid and imposing monuments to their names and achievements.

The present proprietor of Monticello, Dr. Barclay, seems disposed to do every thing which could be reasonably expected of him in yielding to the public curiosity to visit so celebrated a place: this facility has, however, been much abused, and improprieties of a gross kind committed. He is invariably attentive to persons who come introduced; others are placed under certain restrictions.

The next day we started for the Warm Springs, and having spent the night at Cloverdale, distant about 70 miles, reached them the morning after at breakfast. The road is a good turn-pike for the most of the way; up to Staunton the country is well improved; in a short time afterwards you enter the defiles of the hills and mountains, and are encompassed on all sides by wilderness and bold savage scenery, which continue with but partial interruptions till the end of the journey. Just before reaching the Warm Springs you cross a mountain called after them, and of 1000 feet or more elevation; the ascent is tedious and protracted; but the descent is not amenable to any such imputation, and is indeed rather discomposing to a plain citizen's nerves, from the rapidity with which it is executed by the stage. Backing the horses so as to moderate the speed downwards is out of the question, for the lock upon the hind wheel being once fixed on the top of the mountain, away you go like a sled upon the side of an icy hill, with short turns alternately right and left, till you get to the bottom. This manœuvre, for such it may be called, is executed in a few minutes to the no small discomfiture of persons who never participated in it before. It would be well before it is begun to have some understanding with the driver about speed, but when the latter is once established near the top of the mountain, the stage from a mere vehicle, becomes a species of projectile against which the physical opposition of the wheel horses is good for nothing. To hold on to your seat is therefore the only rule. The comfort of this rapid descent is not at all improved by seeing precipices of some hundred feet on one side within a short distance of the wheel, and the conviction that the whole machinery must work perfectly true to save from disaster.

The driver that we had seemed never to have studied the doctrine of centrifugal forces, and as he made one of his left hand turns with uncommon activity, I almost conceited that I could feel the pitch of the stage over towards the precipice at its side. Having escaped this, I told him that I had never seen a more unphilosophical turn than that; though the meaning of the expression was perhaps not understood by him, it put the passengers into a laugh which answered the purpose, and eased them of some of their anxiety. At the foot of this mountain, the descent of which is the most memorable incident to a traveller on the road from Staunton, we were landed safely at the Warm Springs.

The central point of this establishment is the pool for bathing; there is however, also, a spring of drinking water, of certain mineral qualities. The bath is an almost inconceivable luxury to such as have not seen it. It is an octagon of thirty-six feet in diameter and five feet deep, filled with water perfectly transparent, and of a high refracting power; it deserves fully the name of a liquid crystal. Its temperature is $97\frac{1}{2}^{\circ}$ and invariably so

from one year's end to the other; at the circumference it is about half a degree less, as this part is more distant from the supply of water which rises up near the centre. On being emptied, which is done two or three times a day, it fills in an hour; the supply of water is invariable, and is never connected in any perceivable way with atmospheric changes. A great quantity of carbonic acid gas. is continually rising in bubbles to the surface of the pool. Its taste is slightly sulphurous. The temperature of this bath, the most suitable for pleasure as being exactly that of the human body: its great extent; the extreme transparency and buoyancy of the water, for the gas from it attaches itself to the bather, so as to diminish specific gravity; and the arrangements, all conspire to make it the most perfectly delightful place of the kind in this country, and one which no artificial application of human skill could possibly rival.

Nero himself in the plenitude of Roman power and of luxury, probably never saw any thing comparable to it. The pleasure of swimming under such circumstances cannot be described adequately.

Over a marsh with a gravelly bottom, and of about an acre in extent, there are several springs of equal abundance and of similar qualities, so that it would be easy to make the present pool one hundred feet in diameter instead of thirty-six, which would be still more remarkable and fascinating. The building around it is open at the top, and is now old and in decay: such a place deserves a peristyle of white marble and will no doubt at a future day get it.

The following results were derived from some experiments on this water. A clear solution of Prussiate of potash produced no change; neither did subnitrate of bismuth; one of acetate of lead threw down a copious white precipitate; lime water produced a copious white precipitate of a flocculent appearance.

I collected carefully some of the gas of this water and found that it made lime water slightly turbid, and in a little time small particles of a white precipitate were seen floating in it. A stream of this gas directed upon a paper on fire extinguishes the latter: it also puts out the ignition of a piece of Chinese punk with as much celerity as a stream of water would. The foregoing observations were made respectively six times or oftener, so as to test their certainty and accuracy, and with uniform results. A gallon of the water, on being boiled, does not leave more than a few grains of a sa'ne or earthy residue of a white colour.

A friend has furnished the following observations on a residuum put into his hands:

"The whole from 18 pints of the vaporated water weighed 65 grains.

"When placed in dilute hydrochloric acid it dissolved with effervescence, leaving however a quantity of gritty matter which

appeared upon a cursory examination to consist of alumine and silic.

“Besides these insoluble matters the water contains carbonate of lime (which must have been held in solution by the excess of carbonic acid,) sulphate of magnesia and iron. I was unable to detect any other substances in solution. The quantities of carbonate of lime and sulphate of magnesia considered in relation to each other appeared to be in the ratio of 2 carbonate lime to 1 sulph. magnesia. The quantity of iron is small, but sufficient to strike a very deep blue with the prussiate of potash.”

The medicinal agency of the bath is however what would recommend it chiefly to the valetudinarian or patient, and its effects may be improved by the use of the water of the spring adjoining, to which I have alluded, as having common properties with it, and upon the water of which for greater convenience the principal part of the foregoing experiments was performed. Its temperature, the sulphuretted hydrogen gas, in a small quantity probably, dissolved in the water, and the carbonic acid gas seem to be the main elements which characterize it.

The effect of the bath if one remains perfectly quiescent is to reduce the frequency of the pulse, but to increase its volume; the former it does about two strokes in the minute; it afterwards stimulates the heart and arteries so that there are one hundred voluminous pulsations in the minute, and especially if you take exercise, or go in after dinner. It acts strongly on the kidneys. Some difficulty of breathing and oppression of the breast are found from being immersed in it, and a slight fulness of the head; but the former effects do not seem greater than what would be occasioned by immersion of the chest in any bath, which of course impedes respiration from a dense medium pressing on the thorax and thereby resisting its dilatation.

This bath disposes to hæmorrhage from the viscera of the abdomen and pelvis; hence it should be used very cautiously by persons of either sex having this tendency.

In cases of reducible rupture it causes the intestines to ascend, this is a common observation of the keeper, and verified by the testimony of gentlemen of intelligence who are well acquainted with the fact. It may be accounted for by the intestines being made to float higher in the abdomen, in consequence of the gas they contain, and their upward pressure against the diaphragm will also assist in accounting for the embarrassment of breathing which is commonly felt. To medical readers may not this afford a hint for using an erect column of warm water, as a bath, and of a depth proportionate to the height of the patient, in strangulated hernia?

I have but little doubt that this bath, if assisted by the drinking of the water of the contiguous spring, and taken under regulated circumstances, would be a most powerful agent in dropsi-

cal affections, and especially anasarca, depending on hepatic derangement.

The bath is under the charge of a judicious and attentive keeper, Mr. Langridge, who for a small compensation has a fire in an adjoining room for the bathers to dress by, and also wipes them dry with fresh clean towels. The ordinary duration of the bath is fixed by the attendant at fifteen minutes at most, which period I found to be scrupulously observed by gentlemen who have resorted to it for years; it would seem therefore to be a rule of absolute experience. In my own case I felt no inconvenience from remaining in it for forty-five minutes, paddling about and swimming most of the time. A lady of the neighbourhood told me that when young, she frequently staid in half the day in the winter, and was not sensible at the time of inconvenience. She had a fine long suit of hair, which was much injured by it, and finally came out, and she also thinks that at a subsequent period her health suffered from it. She is childless. Mr. Jefferson at his last visit about three years before his death, staid in on one occasion for two hours, and afterwards was of opinion that it impaired his health to a degree from which he never recovered. It is in fact so fascinating and the pleasure so unusual that nothing short of the repeated remonstrances of the keeper will draw the new comers out in a reasonable time; he generally gives force to his argument, by quoting the case of a young man who neglected his advice, and on coming out fainted.

A prejudice exists with some against going in with a full stomach. In two hours after a hearty dinner, without other drink than water in my own case, I found the sense of distention of the abdomen removed, digestion improved and no fullness of the head to follow.

O.

LETTER III.

Tour to the Virginia Springs, August 18, 1833.

MR. EDITOR,

My last communication being dated at the Warm Springs, such observations on their medicinal qualities were introduced as seemed likely to be useful to the invalid or visiter. It may now be stated that the accommodations are excellent: they consist of a central Hotel, about one hundred feet long and two stories high, with a portico as yet unfinished, of the same length, and on the east side. Around this hotel, there are many lodges or cabins for such persons as choose to occupy them. The table

is well furnished, with all the varieties of flesh and fowl in common use, to which may be added a constant supply of fresh venison, just from the adjacent mountains. The landlord, Mr. Fry, is very attentive and obliging, and being remarkably good humoured himself, does his best to keep all his guests in the same mood, in which he succeeds well, judging from the appearance of happiness on their countenances.

At the distance of five miles from the Warm Springs, there is another group of thermal waters of less volume, but of a higher temperature, from which circumstance they are called the Hot Springs. Some of these springs are used for drinking and others for bathing. They freely discharge air in bubbles, which rise with considerable rapidity, and are probably also carbonic acid gas, as a mixture of this and pure lime water well filtrated, throws down a strong white precipitate. Their taste is slightly acidulous and somewhat sulphurous. One bathing pool is called the boiler, and its temperature is 104° , but the stream of water which is conducted into it by a spout is 108° . There are other springs, the temperature of which is 99° . Near one of the latter is a common spring at the ordinary heat of 54° . The streams from the two, after running a few yards, unite, but keep their distinct temperature for some distance, so that a finger may be immersed into one stream, and another finger of the same hand into the other stream of a different heat.

At this place, separate bathing pools are allotted to the two sexes, in which there is some convenience, and indeed the more necessity, as the supply of water does not furnish so rapid a change as the Warm Springs. At the latter, the celerity with which the body of water is renewed constantly, obviates the objections of cleanliness, which may be brought against a number of persons going into the same bath; and moreover, there are two small baths, each of about twelve feet in diameter, for such persons as choose to be alone.

The following are the results of some experiments on both thermal waters of the Hot Springs.

A solution of prussiate of iron was not affected by them; neither was the subnitrate of Bismuth. A solution of acetate of lead, threw down a copious white precipitate: and it was just stated that lime water is rendered very turbid.

The inference is that this water bears a very strong analogy to and is perhaps identical with that of the Warm Springs. The most striking difference being in regard to temperature, it may be accounted for by supposing that the Hot Springs are nearer to the source of the heat, whatever it may be, volcanic or otherwise. The source is probably not remote, for otherwise, the water in passing through its channels under ground would be reduced much nearer to the temperature of common spring water, to wit, 54° .

The Hot Springs are said to be extremely useful in rheumatic and ancient hepatic affections. Remarkable cures have been accomplished by its baths and by submitting the diseased region to the impulse of the stream, whose heat is 108° . It is probable that some reports in detail will be published before long, on these points, by eye witnesses; on which occasion a more correct estimate may be formed of the value of these waters. The establishment has recently passed into the hands of an intelligent and enterprising proprietor, Doctor Goode, who will spare neither trouble or expense to improve its condition; and it is already in a state in regard to eating and personal accommodation, which is very highly applauded by persons who have tried it during the present season.

About two miles from the Hot Springs, on the road leading to the Falls Valley, there is a spring the taste of which is astringent and sweet. It leaves a copious deposit on the rocks over which the stream runs; the deposit has at first a metallic brilliancy, resembling a new gilt button, and afterwards turns black. An old woman, supposing it to be gold, collected a large parcel and fused it, by which she obtained a piece of copper the size of a cent. Its effects are said to be cathartic, and it has in two instances cured muscular inaction which seemed to be neither rheumatic nor paralytic. About fifteen or twenty miles from the Warm Springs there is another Spring said to be strongly impregnated with alum, and what is also remarkable it is cathartic. It is resorted to by the people of the neighborhood.

The highly intelligent resident physician of the Warm Springs, communicated the preceding statements. Should a regular inquiry into all the chemical properties of the Virginia Springs generally, ever take place, it would be worth while to include in it, the two latter, so that their specific characters might be properly understood and appreciated; there may be some peculiarities making them highly medicinal in certain affections, which are untractable to the common modes of treatment.

It may be here remarked that the head of the Warm Springs appears to have nearly the same level with the bath itself, for the latter fills much slower as the water rises near the top. It will probably never be deemed expedient to raise this bath above its present bed and depth, but should an attempt be made, it ought not to be overlooked that such an experiment, by increasing the difficulty of the water finding a vent, may possibly force its subterraneous current into a different channel, and thus the spring itself would be lost, or should it burst out at an accessible point, its temperature might be much reduced. This danger is merely hypothetical, but as the spring is in a limestone region, the numerous subterranean fissures and caverns which exist, present some facility in a new outlet being formed, if the old one be much obstructed. A chalybeate spring which once

discharged at the Warm Spring, has had its current lost, owing probably to the hydrant attached to it having raised the column of water too high for its source.

The Warm and the Hot Springs are in Bath County. Forty miles to the west of the former, and in the adjacent county of Greenbrier, is situated the celebrated White Sulphur, which like the large central diamond of a crown, reflects its rays on all around it. The road to it is so hilly and mountainous, in passing the Alleghany and its tributary ridges, that if a private carriage be used, a night should be spent on the way; this may be done comfortably at Callihan's, distant about twenty-eight miles. About 11 o'clock the next day will afford good time to reach the White Sulphur, and in case of a disappointment in not being received there, to register your name, and proceed on to Lewisburg, nine miles further, where one may stay till a vacancy occurs.

The White Sulphur Spring is unquestionably the great focal point of mineral water, not only for Virginia but for every State to the South and West of the Alleghany mountains. For the week or two preceding our arrival crowds of persons in carriages, in stages, on horseback, and in every other mode of travelling, had been turned away for want of accommodation, and without some fortunate circumstances, we should have shared their fate. The devotion of people to these waters, and the anxiety with which they look for reception at them, can be compared to nothing short of the intense feeling of the Hebrews at Jerusalem, where a great multitude of the impotent folks, the blind, the halt, and the withered, waited for the moving of the waters of the celebrated Pool Bethesda, to be cured of their diseases by plunging in. The desire to be admitted is indeed so great that it amounts almost to a mental possession: no disappointment can be more strongly marked on the countenance, than that of the weary, emaciated and care worn pilgrim, who as he slowly winds his vehicle into the court yard and in a doubtful tone of voice asks admission, is answered by the agent, "no accommodation, Sir;" it seems almost like cutting the last filament which connects him with life. Under such strong conviction of the virtues of these waters, multitudes are found, imploring to be received, and thankfully acknowledging the boon, with the privilege of scrambling for a dinner, and sleeping on the floor.

The establishment of the White Sulphur is suited to the accommodation of two hundred and fifty visitors, but by some address is made to receive three hundred and upwards. It is on the side of a hill looking to the south and forms an oblong of small houses and cabins, of about six hundred feet by three or four hundred. The area is interspersed with fine forest trees, and has some rows of cabins inconveniently placed in it, notwithstanding which its verdure, extent and fine elevation give

it a very noble and attractive appearance. It is much to be regretted that the table is served indifferently, and in a manner by no means commensurate with the immense receipts during the season. There are other evils productive of a common complaint from the guests, and which would stop the resort to these springs, were their celebrity less. It is generally believed that a proper extent and style of accommodation would attract permanently during the season a company of at least one thousand persons, and in doing so would throw from forty to fifty thousand dollars of clear profit into the hands of the proprietors.

Some experiments which I made on this water, showed it to be highly charged with sulphuretted hydrogen gas, which is perhaps the most active principle, though it would seem to have a small quantity of some saline and earthy ingredients. There are two springs, an upper and a lower, the latter is almost exclusively used from its supposed greater power. The lower spring did not affect a solution of prussiate of potash; it changed sub-nitrate of bismuth to a light crimson or brown and produced an exceedingly copious black precipitate with a solution of sugar of lead. The upper spring did not affect a solution of prussiate of potash, but with subnitrate of bismuth it formed a very copious black precipitate, while with sugar of lead it produced a light brown or blackish precipitate by no means equal in quantity to that from the bismuth. There seems indeed to be an inverse operation of the two springs upon the sugar of lead and upon the bismuth.

An occasional bubble of air, perhaps carbonic acid gas, is seen to arise. The temperature of each spring is 63° ; the sulphuretted hydrogen gas emitted from them may be smelled fifty yards off at night, and it turns of a deep black the paint on the foot of the columns around them. The lower spring is an octagon of four feet in diameter and discharges about two gallons of water per minute. The stream of the upper spring is conveyed into a bath house, where it is heated artificially.

The temperature of the air at the White Sulphur Springs is about 55° or 60° at night; from about 8 o'clock P. M. it feels cold and damp. The fogs continue on the contiguous mountains till 9 o'clock, A. M. when they disperse and the atmosphere becomes serene and very pleasant. The night air should be avoided by invalids, and most persons feel a comfort in fires in the evening and morning.

These waters, when drunk for a certain time, generally a fortnight, at the rate of six or eight glasses a day, impregnate the system so much, that a sulphurous smell exhales from the skin. Such is the strong and universal predilection for them, that it is more difficult to say in what they are thought not to be useful, than in what they are useful; dyspepsia, chronic hepatitis, jaundice, the sequels of intermittent and remittent fevers, gout,

derangement from excessive living, and diseases of the skin, form but a small part of the catalogue of ills they are reputed to cure; and they unquestionably, by concurrent testimony, deserve this character. Individuals are occasionally found with whom the water disagrees, by producing too great a laxity of the bowels; and it should at all times be used moderately to prevent the medicinal qualities from passing off by some of the emunctories, as the kidneys, bowels or skin. The person therefore who wishes to impregnate himself with this or any other agents should be particularly cautious not to excite any rebellious movement, by an unusual and excessive quantity introduced at once; for it will be thrown off immediately by the sanative operations of the system. If a costive habit be common to the individual or produced by the journey, two or three doses of Seidlitz powders will remove it, and put this water into an effective state for health.

It is not to be supposed that the only attraction to the White Sulphur is the just celebrity of its water, for in addition to the latter, it is distinguished by the excellence and polish of its company. The debut of a young lady there on her first introduction to society, is for Virginia, quite equal to one at Almack's for an English belle. Whatever Virginia has of wealth, talent, personal elegance, or professional eminence, finds itself represented, and by a proper combination forms a gay and highly finished aggregate. This model of a courtly and well constituted company, has its interest enhanced by contributions from most other parts of the United States, but more largely from the South and West. Notwithstanding the constant causes of collision between guests on the score of provision, room and general accommodation, a spirit of unvaried polite intercourse prevails on all sides, and many inconveniences are forgotten in the jokes to which they give rise. Among the entertainments of this place should be mentioned that of the ball room in the evening, which is well attended and furnished with excellent music. The forenoon is spent in excursions on horseback and in carriages.

Persons who depend upon the public stages and hackney coaches for proceeding from spring to spring, are exposed to procrastination and disappointment, from their being crowded. Where a party is concerned a private carriage is almost indispensable, and such indeed is the common usage of the guests. Private servants should also be brought for table service; and if a lady is of the party a dressing-maid should be along, to attend to her lodge, and for her personal comfort, as the distance of the lodges from the main house makes it frequently difficult to get a servant when wanted. At the same time it should be mentioned that servants fare badly at the White Sulphur; some of the men servants sleep in the stable loft, some in the manger, others in their carriages, which, by the way, are sometimes contested by gentlemen as badly off as themselves; the remainder are disposed

of in any cranny that may be unoccupied. As the servants are for the most part black slaves, who have been accustomed to some variety in their mode of sleeping, the arrangement does not go quite so hard with them as it would with such as have been habituated to regular clean beds. This contingency, however, should be looked for, especially by persons travelling from the northern parts of the United States.

There is a promise on the part of the proprietor of the White Sulphur to correct these and many other defects which may be signalized in his concerns. Should he ever do so and develope properly the fine natural advantages of his property, its waters, scenery and company would complete what remains, by making a terrestrial Elysium for the hot months of the year.

LETTER IV.

By reference to the National Gazette of August 13th, September 10th, and September 16th, 1833, a few observations will be found concerning the Springs situated in the south western part of Virginia. As the group taken together is one of the most interesting and valuable in any part of the world, and presents a greater variety than can be found elsewhere, in a compass of 40 miles, the near approach of the season when valetudinarians, and persons of leisure go in search of health or pleasure, and the desire of information frequently expressed, induce me to give from my itinerary, some additional extracts on the subject.

Having spent a few days at the White Sulphur Springs, we departed on the 19th of August for the Salt Sulphur, distant 23 miles. The road is hilly and occasionally rough, but if passed leisurely is not dangerous; six miles of the beginning, being on the Lewisburg turnpike is good. Ten miles from the White Sulphur, and on the left hand side, immediately beneath the road, is Rodgers' or the Organ Cave, of limestone rock, being so called from a group of stalactites of very large size, and bearing some resemblance to the pipes of a church organ. Owing to the want of sufficient light we did not penetrate to the chamber containing them; when struck they are said to emit distinct sounds, which with some imagination may assist in justifying the name given to this cave. The entrance to the cave is in a ravine a hundred feet or so below the road; it forms a fine arch of eighty or more feet span, and forty or fifty high; this at least was the estimate of proportion, I made by the eye; it is however extremely difficult to be accurate in this way where large masses are concerned, and we commonly fall short of actual measurement.

This entrance is the beginning of a vestibule which slopes downwards rapidly for three or four hundred feet, and has its bottom covered with large masses of rock detached from the arch above. At the lower extremity of this spacious vestibule, on the right, a small craggy opening of four or five feet, leads into the interior chambers of the cave, and from this point all is naturally perfect darkness. The opening itself is rather appalling, and the first sensation of getting into it is somewhat like that of Sinbad the Sailor when he was entombed alive. After a few paces, the space is enlarged, so as to vary at different parts from five to twenty or thirty feet. In this interior chamber is a stream of water, and at the end of the chamber a considerable expansion of dimension takes place at a point where saltpetre has been occasionally made, to the amount of two thousand pounds a year. A part of the route leading to it is evidently a fissure or rent of fifty or a hundred feet in the limestone rock, presenting a forcible parting of the two portions, and a subsidence on one side of two feet, the depressions and projections of one wall having the reverse surfaces on the other wall. All the channels of this cave have not been explored, so that its actual extent is unknown; it has however been traversed far three miles to an open entrance on the side of a hill at that distance, and from which emerges the stream of water mentioned. The interior of this cave is for the most part dry and the air pleasant; the guide being the owner of it, and having worked in it for ten years, is well acquainted with it and may be trusted.

Some persons who go alone, when they reach the narrow pass to the interior, become intimidated at the thoughts of murder, robbery, &c., and decline entering. The guide however seems to be a plain honest countryman, whose only peculiarity, is that of a wild expression of the eyes from having spent so much time in the darkness of this cave, in manufacturing salt petre. Some splittings of resinous pine constitute his flambeau, and seem to be well managed so as to prevent being extinguished; depots of the same are made at intervals, so as to furnish a supply of fresh materials as the old are exhausted. The cave is sufficiently interesting to be visited, and like such generally as are in limestone countries, it seems to be very extensive. The place of this cave is known by a small board fixed on the road side, and there is generally a vidette on the look out for visitors.

The Salt Sulphur has latterly come into note; six years ago, it had forty guests at a time, now it counts two hundred. It is hemmed on every side by high hills, and is situated in a narrow valley along which runs a limestone stream of twelve or fourteen feet in width, and only a few inches deep at this season. It is said to be fourteen hundred feet above tide water, and one hundred and fifty feet lower than the White Sulphur. The ther-

mometer ranged during my visit at about 60° during the night; there were no fogs night or morning, and a most delightful transparency of the atmosphere existed, so that the stars shone with uncommon brilliancy.

In regard to freedom from fogs and temperature the Salt Sulphur has therefore an evident advantage over the White Sulphur; this arises I think from the hills for half a mile around, having been cleared of a dense and large forest growth, whereby they are readily heated by the day's sun, and this heat being radiated from them at night not only prevents the formation of fogs upon them, but would even dispel them if they were wafted there. The clearing of the hills has however rather a bad effect upon the scenery of the place, as an arid parched soil with large rocks projecting from its surface, is substituted for the rich deep green foliage, so remarkable in this part of the United States.

The guests are mostly accommodated in lodges, distributed, with but little system, over a rising ground,—and the evenings are enlivened by a band of music and dancing. The table is excellent, and its merits are more conspicuous, in consequence of the transition from that at the White Sulphur; where every day is a *jour maigre* without the benefit of fish, and is rendered the more intolerable by the keen appetite produced by its waters and the mountain air. The whole establishment is conducted with skill and close attention by its proprietors, Messrs. Erskine and Caruthers, and is well worthy of public patronage for its comforts, and the amenity of its hosts.

The spring is a square of two feet, and discharges about a quart of water in a minute; it has obtained the name of Salt Sulphur, from the precipitation found on the rocks and stones over which its waters flow; it contains however, very little of the ingredient, common salt, implied by its popular designation.

The following observations were made upon it.

No change was effected upon the water by adding to it a solution of the Prussiate of Potash.

Mixed with subnitrate of Bismuth a turbid ash coloured precipitate was formed in small quantities;—and mixed with a solution of acetate of lead, a black soot coloured precipitate fell down.—Hence, as well as from the taste and smell, may be inferred the existence of sulphuretted hydrogen gas, but in quantities much inferior to the white Sulphur.

A gallon of the water when carefully evaporated yielded one hundred and fourteen grains of a white residuum, one hundred grains of which was ascertained subsequently to be composed as follows:—

| | |
|-------------------------|-------|
| " Sulphate of Magnesia, | 16.7 |
| Carbonate of Lime, | 11. |
| Carbonate of Magnesia, | 3.7 |
| Sulphate of Lime, | 52.53 |

| | |
|--------------------|------|
| Carbonate of Iron, | 1.45 |
| Muriate of Soda, | 6.09 |
| Sulphur, | .52" |

Another fountain near this, called the Sweet Spring, appears to have about one half of the strength of this, judging from the colour of the precipitate formed by the aforesaid solution of sugar of lead and the subnitrate of Bismuth. In other respects it is similar.

Aug. 21st. Visited the Red Sulphur, distant sixteen miles from the Salt Sulphur. The road is extremely hilly and bad, and abounds constantly in precipitous inclinations on the sides, which make it trying to the fortitude of persons not accustomed to mountain passes. This spring is situated in a deep glen, made by abrupt mountains of four or five hundred feet in height, which overhang it so closely that the sun must have several degrees, from fifteen to twenty probably, of elevation for its rays to reach it directly.

There are two fountains here a few feet apart and of nearly equal taste. Their temperature is 68°. Their water produces no effect upon a solution of Prussiate of Potash, capable of indicating the presence of iron. But a very copious black precipitate is formed with subnitrate of Bismuth, also with a solution of sugar of lead, exhibiting a dose of sulphuretted hydrogen gas but little inferior to the White Sulphur, and superior to that of the Salt Sulphur.

About twenty grains of a precipitate form the residuum after evaporating a quart of water of either spring.

A few yards from the springs their water is received into a large box, the bottom of which is covered with a black slimy deposit, on the top of which is a thin layer of sediment of a brilliant red or lake colour, the reflection from which is very strong when the sun shines upon it. The spring has been named from this sediment, the nature of which is undetermined; some of it was brought to Philadelphia for analysis, but it had undergone such changes from delay or agitation on the route, as to make its character undistinguishable. The water of the Red Sulphur appears to contain but little besides sulphuretted hydrogen. It shows traces of muriate of soda and of iron.—The muddy deposit found in the bottom of the box is curious—it seems to consist in some measure of a precipitate formed by an union of the iron of the water with the tannin of the oak leaves or other vegetable matter which falls into the box.—The red precipitate consists perhaps of some of the combinations of iron.

The Red Sulphur has been frequented for forty or fifty years, but its retired situation, the difficulty of approaching it, and its location in a mountain dell, kept the number of its company at a small amount, till within a short period, when it fell into the hands of its present enterprising proprietor Mr. Burke. Sensi-

ble of its advantages, he has cleared away the trees from the mountains, which has increased the dryness of the situation and diminished the fogs inseparable from high mountain localities where the rays of the sun are not permitted to have their full force. He has also built an Hotel of one hundred feet in length and two stories high, with a double portico the whole length; and is about other improvements which promise to make the accommodations of the best kind. Small lodges of logs are however here, as at all the other Virginia watering places, the principal means of accommodating guests.

This fountain has a remarkable effect on the pulse, in reducing the frequency of its strokes after a few days use of the water. It is resorted to for most chronic complaints, and is said to fatten much; but its particular celebrity is for pulmonary diseases, especially in their early stages. The testimony of its efficacy then is so abundant, that it would seem to be well founded. Unfortunately, many individuals resort to it, in the last stage of consumption, when from the pathological changes which the lungs have undergone, nothing short of a regeneration, or rather a miracle can cure. Such persons ought not to leave their own homes; the inevitable tendency of their disease may then, at least, have some of its pangs mitigated by domestic comforts and endearments: but otherwise, the fatigue of travelling—the excitement of mountain air, and changes in the mode of living and lodging, injure them very much. They spend a few irksome weeks and being disappointed in their hopes of amendment, attempt to return home, but not unfrequently die on the road. The reputation, however, of the Spring is such, and the symptoms of phthisis so illusory to the individual who has it, that the emaciated form, and sepulchral cough of consumption, may be found in every direction. The patient with faith unabated at the progress of his complaint, still quaffs, almost to the last gasp, the waters of the Red Sulphur as an infallible fountain of health.

The late William Wirf, whose death our country has so much reason to deplore, was one of the invalids of the last season at this Spring; not, however, for a consumption: his health he thought, much improved by it, as he had gained, in a couple of weeks, several pounds in weight.

Having returned on the next day to the Salt Sulphur, we left there on the 23d August for the Sweet Springs, distant nineteen miles. The road was hilly and rough, and was not rendered the less tedious by a driver who went at the slowest pace consistent with the locomotive powers of his horses. It took, therefore, eight good hours to finish this journey.

The plot of ground connected with the Sweet Springs is open, and consists of gently undulating hills, bordered by high mountains, and interspersed with lodges and a few fine forest trees. An excellent table is kept by an obliging landlord, Mr. Rodgers.

The central point of attraction is a spring and a bath, whose temperatures are at about 70° ; from my thermometer being out of order I could not ascertain accurately, and was therefore left to mere sensation, which is rather an uncertain guide. The quantity of water discharged amounts to many hogsheads in a minute, it being sufficient to turn a mill a short distance below. Its taste is acidulated like seltzer water, and the carbonic acid gas is in such abundance as to form an incessant stream of bubbles rising to the surface and breaking. It holds a large quantity of lime in solution, as it forms stalactites in great abundance, at a fall of about two miles distant, which I did not see.

Neither a solution of prussiate of potash, of sugar of lead, nor subnitrate of bismuth, suffered any change from it. It would hence appear to be destitute of iron and of sulphuretted hydrogen gas; in the latter particular it therefore differs from any of the springs heretofore alluded to by me. The water is stimulating, and excites a keen appetite, which is well responded to by the abundance and excellence of the table: it is gently diuretic and cathartic. Why this spring should be called sweet is difficult to determine. The taste of the water is pleasant and refreshing, but has nothing of a saccharine flavour.

The appearance of this place is highly attractive. The company is about two hundred; and like that of the other springs, generally, presents many personal attractions of high polish and cultivated intellect. A few weeks may be spent there very pleasantly.

A strong and very pure Chalybeate Spring is about one mile from the Sweet Spring; there is some intention of establishing accommodations around it. O.

LETTER V.

The Virginia Springs.

The Sweet Springs having been the last on my route, I may now mention that the order established by experience, and especially in hepatic affections, is to begin with the White Sulphur, where a fortnight at least should be spent so as to impregnate the system thoroughly with it, which may be known by the effluvium from the surface on rubbing the hands together, and also by pieces of clean silver coin becoming copper coloured, when worn in the waistcoat pocket. Next comes the Salt Sulphur, where a week or a fortnight may be appropriated to the use of its waters; the same length of time may be devoted to the Red Sulphur, then a week to the Sweet Springs, and what remains of the season may be disposed of at the Hot or Warm Springs. The luxu-

ry of a bath, at the latter never satiates, but is a renewed pleasure of the most delightful and untiring kind, whatever may be the frequency of its use. As I have said in a former letter, none can estimate it who have not tried it, and it is worth any one's time who can afford it, to experience, once at least in his life, the pleasure of a perfect bath, just from the laboratory of nature.

This group of Virginia mineral waters may be reached in the public conveyances in several directions—to wit: from Washington by the Piedmont route to Charlottesville—from Fredericksburg—from Richmond, and from Baltimore, through Winchester and Staunton. The first is the shortest, and takes five days from Philadelphia—the last requires about the same time. When once landed at the springs, it is difficult to proceed, especially in a company, from the crowded state of the stages. Hacks may be got, but with some uncertainty, on the spot. A private carriage is the only sure dependence, and most of the Virginia and Southern visitors travel in that way: a conveyance of the latter kind will take ten or twelve days from Philadelphia, but the time may be abridged by steam transportation to Fredericksburg. I would also recommend an abundant supply of silver coin in small pieces, as change is very scarce in the mountains.

As the White Sulphur is much crowded during the month of August, and individuals in a delicate state of health may be prejudiced by want of personal accommodation or of suitable food there, I would recommend an immediate resort *to the Red Sulphur as a substitute*; the difference between the waters is too inconsiderable to justify a hesitation, when comfort is added to the account of the last. It appears to me indeed not improbable, if some improvement does not occur in the management of the White Sulphur, that the enterprising character of the proprietor of the Red Sulphur, and the decided strength and virtue of the waters must make great inroads on the profits of the former.

While in this region of country the tourist should visit a lake situated on the top of a mountain, and said to have formed within the last forty or fifty years. I did not see it myself but the description is such as to leave the inference of its being a curiosity well worthy of attention; from all accounts it would appear to have arisen from a subsiding of the summit of the mountain, which increases a little every year; it has within the memory of an individual, extended from a pond about two or three hundred yards in length to a lake of three miles, with a depth of some hundred feet, and is probably supplied by springs at its bottom.

The return route from the Virginia Springs may be varied agreeably, by a visit to the celebrated Natural Bridge, one of the greatest curiosities of this continent. Accordingly we left the Sweet Springs on August 24, at half past nine o'clock, A. M., for Fincastle, distant thirty miles, and the seat of justice for Bottetourt County. The road leads over three mountains of

great elevation, one of which has a base of seven miles; there are occasional hills, but these mountains are the striking features of the route, and excite strong interest by the extensive views from their summits, of adjoining mountains, which rising in the distance, and covered with a luxuriant growth of forest trees, resemble a fine undulating grass sward, from the uniformity and thickness of the trees upon them, which conceal completely the surface of the soil. The dark foliage of the pines, as you examine the distant mountains, contrasts finely with the lighter tints of the oak, chesnut and hickory, and is seen clustered in distinct groves in the midst of the other trees, until the summit of the mountain is almost reached, when the pines become thinner and thinner, and finally disappear under the influence of an atmosphere and elevation uncongenial to their habits. This feeling of admiration at a magnificent prospect is checkered from time to time, with thoughts of personal safety and dread, when on looking to the right or left you perceive, just at the side of the mountain road and within a few feet of your carriage, precipices of some hundred feet in depth, and tending to inevitable destruction in case of error in driving or unmanageable horses. The route is however executed with great care and judgment by the drivers, and at the foot of the second mountain, an appetite sharpened by the toils of the day, is gratified by an excellent dinner, upon a fine saddle of venison, shot in the morning, and by the rural adjvantia of boiled ham, fried chickens, &c., all cooked in the best style.

After emerging from the defiles of the third mountain, an immediate transition occurs from the vast solitude of a wilderness; you get into the valley of Virginia, and the eye is regaled with a champaign country, and all the indications of settled polished life. You are in fact in the midst of the extensive fertile estate of Mr. ———. Its large, imposing and well kept family mansion, is situated on a gentle grassy elevation, which descends like a cone on all sides; and is tastefully surrounded by a luxuriant growth of forest and fancy trees. The scene is such as to remind one of the period when the country was generally divided into those large manors, and tenanted by the high minded Cavaliers of England, who indignant at the ascendancy of Cromwell, sought a refuge from his tyranny in the colony of Virginia. The capacious, polished and easy rolling family coach, which we met on the road, its dignified and matronly tenants, the well fed horses, and the sleek coal black driver, all contributed to sustain the recollection of ancient customs.

Having spent that night at Fincastle, we started the next day for the Natural Bridge, distant twenty-four miles. The course is parallel with the western side of the Blue Ridge, and affords many fine views of its summits; the Peaks of Otter are the highest of this mountain range, and rise like a cloud from the sur-

rounding scenery; their size and elevation are constantly bringing them into view as the road makes a favourable turn.

The Natural Bridge has been well described by Mr. Jefferson, in his notes on this State. It is a single stone arch thrown across a ravine which separates the north-east side of a mountain from its base, and which gives passage to Cedar Creek, a stream but small at that season of the year. The arch is a span of ninety feet long, is fifty feet in thickness, and is sixty feet broad. The top of it has the same inclination with the side of the hill, and is covered with a soil affording growth to trees and shrubs; the cleft in the mountain is so masked by the latter, that the bridge may be easily crossed without a stranger knowing it.

The cleft is two hundred feet deep, with perpendicular sides, and when examined from the verge of it, is so dark, so deep and so chaotic below, as to produce a frightful and tremulous sensation; a feeling of insecurity which might indeed overcome one not accustomed to precipices. An intense desire, like a spell, is felt to look over the crown of the arch to the bottom, and as the margin is flat it may be done, but ought to be executed cautiously and under proper safeguards of position, lest a mere animal movement or weakness should make the look a fatal one; for the ordinary influence of mind seems to be almost annihilated in contemplating this awful wonder.

After this really thrilling sight from above, the feeling may be suspended by pursuing a narrow path on the south side, which after several windings leads to the bottom of the chasm and to the margin of the stream. On looking up then to the immense massiveness of this solid arch, and seeing it hanging at its great height, 150 feet over your head, the state of mind changes to one of profound and ejaculatory admiration; you adore the power that formed it, and yet think what is this to the universe! you look at your own stature and that of your companions, which form an almost ludicrous contrast with the gigantic work before you; it is perhaps the first time that a human being ever looked so insignificant to you, and the exclamation bursts from all, what an atom in creation is man!

There are three views of principal interest, which may be taken at the bottom of the chasm. One is higher up the stream than the bridge—another lower down—and the third is vertical or directly upwards. The last is the most impressive from presenting the fullest idea of the massiveness of this vast impending structure, which in a single block, beautifully and regularly arched below, is thrown from one abutment to the other. This surface is marked by the dampness, which filtrates from above, into several grotesque irregular figures, which may with some imagination represent a lion, an eagle, a scymetar, and so on; I did not myself perceive the resemblance pointed out by the guide, but the company did. For some hundred feet higher up

and lower down, the sides of the chasm are perpendicular, and of solid limestone rock, which forms the bridge itself. As the arch spreads itself from side to side it appears smooth and almost chiselled; the upper parts of the buttresses have also this appearance; but it may all arise from the distance at which the surface is viewed. The immensity of the whole also makes ordinary inequalities of surface look almost smooth. The buttresses are strengthened by rounded projections at their summits and base, as if to present their being crushed by the prodigious weight above.

The lower view seems, from the frequency of prints representing it, to be the favorite one of artists; it is grand and impressive in the extreme, but exhibits the arch with sides unequally curved. The upper view I prefer, because it approaches more to symmetry, and represents an almost gothic arch, with its two equal sides, and a nearly pointed termination in the centre.

The harmonious proportions of this bridge prevent an accurate conception of the elevation of the arch by the eye alone, but the individual who throws a stone high enough to reach it, must have unusual strength of arm, and a sling would be necessary to most persons to accomplish the feat. General Washington is said to be the only one who ever threw a stone with the single strength of his arm, fairly over the bridge from the level of the stream.

The probability is that the whole of the opening under the bridge has been forced by an accumulation of water in a valley above it. This conjecture is confirmed by large detached masses of rock existing in the stream lower down, and being found for seven miles till it joins the James River. The arch itself has, I think, been formed by the attrition of the creek when the water had at first that elevation, and subsequently the chasm between the buttresses has been made by sudden force, as the inequalities of surface exhibit that mode of disruption. The alternate freezing and thawing of the moist surface of the arch would detach small portions of it continually, and thus give the equal surface which it has.

One of the common feats of visitors is to try their climbing faculties by ascending the natural steps of the buttresses, and to mark the height of their ascent by writing their names on the rock. When much altitude is reached, the descent is fearful; in this respect, the line, *Descensus Averni facilis est*, has an inverted meaning. A young gentleman of spirit and activity, having got to a certain elevation, found the descent so appalling, and his head so dizzy from the sight below, that he took the desperate alternative of ascending still further, to the summit of the east buttress, by the steps which chance presented as he went along. He happily succeeded; but having done so, the

sense of the danger he had almost miraculously got through, overcame him, and he fainted.

Having familiarized myself by these detailed and dangerless surveys from below, I ascended the common path to the top of the bridge, and ventured under suitable precautions to look over the side of it from the crown, once more: I found the awfulness of the scene and the moral agitation produced by it diminished, but not subdued; and I quickly retired. At this moment a countryman on horseback rode to the verge of the bridge; and looking down carelessly, after a few moments he said, "Mister, I guess you are frightened by what you see down there." "Yes," I replied, "I am frightened; pray, how often have you been here?" "Oh," says he, "often enough." "Well, when I have been here as often as yourself, I shall perhaps care as little about it."

We left this monument of nature profoundly and durably impressed with its sublimity and grandeur, and with the feeling common to all travellers at the sight of magnificent and extraordinary objects, that of wishing all itinerants to the Virginia Springs to take also a view of what had afforded us so much gratification. A very good tavern is within three miles of this bridge, on the road to Lexington, the capital of Rockbridge county, and the seat of Washington College. It may here be remarked that the stage accommodations about the Natural Bridge are so uncertain, that if a private carriage is not already the mode of conveyance, one should be got at Fincastle, with the agreement to proceed on to Staunton, and, if required, to Charlottesville. From Staunton an agreeable excursion may be made to Weir's Cave, about twenty miles off, and which is another of the great natural curiosities of this district of mountain and limestone; but from want of time I did not visit it.

I have been under obligations to an intelligent young friend for the analyses of the *Residua* which I brought from the Springs.

O.

NOTE.—In closing these informal remarks on the Springs of Virginia, the author takes the liberty of recommending to the perusal of invalids the work on Baths and Mineral Waters, by John Bell, M. D., Philadelphia, 1831. It is replete with sound information on the hygienic and curative powers of the various kinds of baths, and presents an excellent history of the chemical composition of the chief mineral springs of the United States and of Europe. Abounding in that learned and patient research for which the writer is distinguished, should the preceding pages have afforded any pleasure or instruction, the reader will *a fortiori* have more reason to be satisfied with Dr. Bell's work. He will also be struck with the decided superiority which this region of mineral waters has over any of equal extent in England, France, Italy and the more frequented parts of Europe.

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